AMENDMENTS

This listing of claims replaces all prior versions, and listings, of claims in the application:

In the Claims:

1. (Withdrawn) A semiconductor device comprising:

a base region of a first conducting type formed on a collector layer of a second conducting type;

a trench provided in the base region;

an emitter region of the second conducting type formed adjacent to a bottom portion of the trench;

a sidewall provided on an inside wall of the trench; and

an electrode in contact with the whole surface of the base region excluding the trench.

2. (Withdrawn) A semiconductor device comprising:

a base region of a first conducting type formed on a semiconductor substrate which serves as a collector layer of a second conducting type;

a trench provided in the base region;

an emitter region of the second conducting type formed adjacent to a bottom portion of the trench;

a sidewall provided on an inside wall of the trench;

an emitter electrode filling the trench and in contact with the emitter region;

a base electrode layer in contact with the whole surface of the base region excluding the trench;

an insulating film covering the base electrode layer; and

a base electrode provided on the insulating film and in contact with the base electrode layer.

3. (Withdrawn) The semiconductor device according to claim 2, wherein the trench is shallower than the base region.

4. (Withdrawn) The semiconductor device according to claim 2, wherein the trench has a shape so that the inside wall has an slope so that an angle created by a line tangent to the slope and a surface of the semiconductor substrate becomes gradually smaller in a direction from the trench bottom portion to the semiconductor substrate surface.

5. (Withdrawn) The semiconductor device according to claim 2, wherein the base electrode layer is formed of polysilicon.

6. (Withdrawn) The semiconductor device according to claim 2, wherein the base electrode layer is formed of silicide.

7. (Withdrawn) The semiconductor device according to claim 2, wherein the base electrode layer is formed of a multi-layer film comprising polysilicon and silicide.

8. (Withdrawn) The semiconductor device according to claim 2, wherein the insulating film is formed of an oxide film or a multi-layer film comprising an oxide film and a nitride film.

9. (Currently Amended) A method for manufacturing a semiconductor device comprising ~~the steps of~~:

forming a base region of a first conducting type on a surface of a collector layer of a second conducting type;

forming a base electrode layer on a surface of the base region and forming an insulating film on a surface of the base electrode layer;

forming a trench, which does not reach the collector layer, in the base region by creating an opening at [[a]] part of the base electrode layer and the insulating film and forming a sidewall on an inside wall of the trench;

forming a polysilicon layer containing impurities for emitter diffusion inside the trench;

forming an emitter region by diffusing the impurities of the polysilicon layer; and

forming a through hole [[on]] in the insulating film, ~~so as to form~~ forming a base electrode ~~which comes into contact with~~ contacting the base electrode layer through the through hole and ~~at the same time~~ forming an emitter electrode ~~which comes into contact with~~ contacting the polysilicon layer.

10. (Original) The method for manufacturing a semiconductor device of claim 9, wherein the trench is formed as a γ-shaped trench.

11. (Currently Amended) The method for manufacturing a semiconductor device according to claim 9, wherein the base electrode layer is ~~formed~~ made of polysilicon, silicide, or a multi-layer film comprising polysilicon and silicide.

12. (Currently Amended) The method for manufacturing a semiconductor device according to claim 10, wherein the base electrode layer is ~~formed~~ made of polysilicon, silicide, or a multi-layer film comprising polysilicon and silicide.

13. (Currently Amended) A method for manufacturing a semiconductor device comprising the ~~steps of~~:

preparing a collector layer of a first conducting type;

forming a base electrode layer made of polysilicon containing impurities of a second conducting type on a surface of the collector layer and forming an insulating film on [[the]] a surface of the base electrode layer;

forming a trench in the collector layer by creating an opening at [[a]] part of the base electrode layer and the insulating film and doping impurities of the second conducting type so that a doped region is formed around the trench and in the base electrode layer;

forming a sidewall on an inside wall of the trench;

forming a polysilicon layer containing impurities for emitter diffusion inside the trench;

diffusing the impurities of the second conducting type of the doped region for forming a base region and, at the same time, diffusing the impurities of the polysilicon layer for forming an emitter region; and

forming a through hole [[on]] in the insulating film, [[and]] forming a base electrode ~~which comes into contact with~~ contacting the base electrode layer through the through hole and~~,~~ ~~at the same time,~~ forming an emitter electrode ~~which comes into contact with~~ contacting the polysilicon layer.

14. (Original) The method for manufacturing a semiconductor device of claim 13, wherein the trench is formed as a γ-shaped trench.

15. (New) The method for manufacturing a semiconductor device of claim 9, wherein the base electrode and the emitter electrode are formed in a same processing step.

16. (New) The method for manufacturing a semiconductor device of claim 9, wherein the emitter region is formed by diffusing the impurities of the polysilicon layer so that the emitter region is formed within the base region.

17. (New) The method for manufacturing a semiconductor device of claim 13, wherein the base electrode and the emitter electrode are formed in a same processing step.